I CLAIM:

1. A method of fabricating an exhaust duct and mixer assembly for use with a gas turbine engine, comprising:

providing an annular shroud;

forming a plurality of air foils, each having a front end, a rear end, an inner side and an outer side;

forming a plurality of insert members, each having a front edge, a rear edge, and first and second side edges defining a surface;

mounting the air foils to the shroud on a surface thereof in a circumferentially, substantially equally spaced-apart relationship;

securing one of the insert members to at least two adjacent air foils, thereby in combination with the adjacent air foils forming a first flow path along one side of the insert member for directing exhaust gases rearwardly and a second flow path along another side of the insert member for directing a bypass air flow rearwardly when the assembly is installed on the engine; and

repeating the step of securing insert members until the assembly is completed.

2. A method as claimed in claim 1, wherein each of the insert members is placed and secured in a position in which the front edges of the respective insert plates in combination form a circular, front, outer periphery of the assembly co-axial with the cylindrical shroud.

3. A method as claimed in claim 2, wherein the first side edge of each insert member is connected to one of the adjacent air foils, extending substantially from a front and outer corner of the one air foil to a rear inner corner of same, and wherein the second side edge of each insert plates is connected to the other of the adjacent air foils, extending substantially along the outer side of same.

4. A method as claimed in claim 3, wherein a portion of the rear edge of each insert plate is positioned radially apart from a central axis by a distance greater than a radius of the circular front outer periphery of the mixer assembly when the insert plate is placed and secured in position.

5. A method as claimed in claim 2, further comprising:

forming a flange ring with mounting openings for bolted connection to a casing of the engine; and

securing the flange ring to the front outer periphery of the mixer assembly.

6. A method as claimed in claim 1, wherein the respective air foils are welded to the shroud.

7. A method as claimed in claim 1, wherein the respective insert plates are welded to the corresponding adjacent air foils.

8. An exhaust assembly for a gas turbine engine, the assembly comprising:

an annular shroud;

a plurality of strut members extending radially in a circumferentially, substantially equally spaced-apart relationship, each strut member having a front end, a rear end, an inner side and an outer side; and

a plurality of insert members extending between adjacent strut members and secured thereto, each insert member having a front edge, a rear edge, first and second side edges, the insert members co-operating with the adjacent strut members to form an exhaust air flow passage therebewteen for directing exhaust gases rearwardly, the insert members having an outer surface adapted to direct surrounding bypass air flow rearwardly in a direction generally towards the exhaust air flow passage.

9. An exhaust assembly as claimed in claim 8, wherein the front edges of the respective insert members in combination form a circular front outer periphery of the exhaust assembly co-axial with the cylindrical shroud, the first side edge of each insert member being connected to one of the adjacent strut members, extending substantially from a front and outer corner of the one strut member to a rear inner corner of same, and the second side edge of each insert member being connected to the other of the adjacent strut member, extending substantially along the outer side of same.

10. An exhaust assembly as claimed in claim 8, wherein each of the insert members comprises a portion of the rear edge which is positioned radially apart from a

central axis of the exhaust assembly by a distance greater than a radius of the circular front outer periphery of the exhaust assembly.

11. An exhaust assembly as claimed in claim 9, further comprising a flange ring with mounting openings therein, the flange ring being secured to the front outer periphery of the exhaust assembly.

12. An exhaust assembly as claimed in claim 8, wherein the shroud is made of sheet metal.

13. An exhaust assembly as claimed in claim 8, wherein the strut members are formed with a wave pattern between the front and rear ends thereof.

14. An exhaust assembly as claimed in claim 8, wherein the insert members are made of sheet metal.

15. An exhaust assembly as claimed in claim 8 wherein the insert members are cast.

16. A gas turbine engine for use with aircraft including an gas exhaust duct assembly positioned downstream of a turbine rotor assembly with respect to a flow path through the engine, the gas exhaust duct assembly comprising:

an annular shroud forming at least a section of an inner wall of a gas exhaust duct;

a plurality of air foils radially projecting from an outer surface of the shroud , the air foils being disposed in a circumferentially, substantially

equally spaced-apart relationship, and extending in a substantially axial direction;

a plurality of insert members, each defining a circumferential section of an outer wall of the gas exhaust duct and being positioned substantially between two air foils and secured to at least the two air foils; and

wherein the gas exhaust duct is defined at least partially between inner surfaces of the insert members and the outer surface of the shroud, and wherein the assembly is thereby adpated to direct exhaust gases rearwardly in an axial direction through the assembly.

17. A gas turbine engine as claimed in claim 16, wherein flow passages surrounding the assembly are defined between outer surfaces of the insert members and the air foils, the flow passage being adapted to direct a surrounding bypass air flow rearwardly in an axial, radial and inward direction.

18. A gas turbine engine as claimed in claim 16, wherein the gas exhaust duct assembly further comprises means attached to the cylindrical shroud for supporting a turbine rotor bearing assembly.

19. A method as claimed in claim 1, wherein the shroud is adapted to form a section of an inner wall of a gas exhaust duct.

20. A method as claimed in claim 1, wherein the insert members are sheet metal.

21. A method as claimed in claim 1, wherein each insert member corresponds to only one mixer lobe of the assembly.

22. A method as claimed in claim 1, wherein the air foils are mounted to the shroud on an external surface thereof.

23. A method as claimed in claim 8, wherein the strut members are secured to an outer surface of the shroud.

24. An exhaust assembly as claimed in claim 8, wherein each insert member defines one mixer lobe of the assembly.